

# 3

## Applying Mixed Methods in Action Research

### OBJECTIVES

By the end of this chapter, the reader should be able to

- Understand different viewpoints on integrating mixed methods and action research,
- Describe features that are common in both mixed methods and action research,
- Explain the advantages of applying mixed methods in action research,
- Understand how mixed methods can inform each step in the cycle of the action research process,
- Describe the mixed methods methodological framework for action research,
- Discuss the trends in application of mixed methods in action research studies across disciplines, and
- Discuss in detail select examples of MMAR studies.

### INTRODUCTION

The idea of applying mixed methods in action research is not novel. Action research and mixed methods methodologists have discussed the growing use of both quantitative and qualitative data in action research projects.

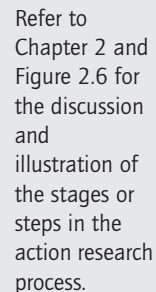
For example, Creswell (2012) drew a parallel between mixed methods and action research because in both research approaches quantitative and qualitative data are collected within one study. Mills (2011) indicated that in spite of the fact that qualitative methods seem to fit action research efforts more appropriately, study research questions may necessitate action researchers to use both quantitative and qualitative data sources, particularly when teacher-researchers have to include student achievement data to augment classroom observations and qualitative narratives. Similarly, Koshy and colleagues (2011) referred to a frequent combination of the quantitative and qualitative data in action research studies in health care. In fact, Richardson and Reid (2006) in their action research evaluation study of a group cognitive behavioral therapy program for older adults with depression noted that,

The triangulation or synthesis of multiple sources of data is a core element of action research and serves to integrate apparently disparate sources of sometimes gross, quantitative data with finer, qualitative data to titrate their combined contribution to global variable change. (pp. 62–63)

Finally, James and colleagues (2008) argued that in participatory action research, practitioners “make use of all available data (both qualitative and quantitative) in order to build a rigorous, cohesive set of conclusions” (p. 81). These assertions are supported by the growing number of empirical action research studies in different disciplines in which both quantitative and qualitative data were collected either at some or all stages of the research process—that is, the stages of reconnaissance or fact finding and evaluation of the action/intervention.

Recognition of mixed methods as a research approach promoted further discussions of a possible connection between mixed methods and action research. Recent action research texts (e.g., James et al., 2008; McNiff & Whitehead, 2011; Mills, 2011) have included some explanation of mixed methods as a potential design or method within action research. In their editorial to one of the first issues of the *Journal of Mixed Methods Research*, Creswell and Tashakkori (2007b) pointed out how the practice perspective or “bottom-up” approach to conducting research influences investigators to apply mixed methods in “traditional” research approaches, including action research (p. 306). The editors argued that researchers tend to adopt new methodological ideas “when they can attach them, in some way, to their current forms of and preferences for research” (p. 306). McNiff and Whitehead (2011) extended Creswell and Tashakkori’s (2007b) view on mixed methods and traditional forms of research, suggesting that action research is a broad methodological approach and therefore “can and should incorporate a range of methods from other approaches” (p. 49).

Alternatively, Christ (2009, 2010) argued that action research should be viewed as “a form of mixed methods research,” because action research shares the same philosophy, methodologies, and design characteristics as mixed methods research (p. 293). While Christ’s observations about **epistemological** and methodological similarities between mixed methods and action research are correct, there is widespread recognition of action research as a methodology and not a single method (McNiff & Whitehead, 2011), which makes it difficult to position action research within a mixed methods approach. Similarities and differences between mixed methods and action research were also explored by Wisniewska (2011). She compared mixed methods and action research empirical studies in the English Language Teaching field and concluded that the two approaches may be similar



Refer to Chapter 2 and Figure 2.6 for the discussion and illustration of the stages or steps in the action research process.

in terms of stating goals for data collection and integrating methods, although they may differ in data analysis, results presentation, and how qualitative and quantitative methods are combined within a study.

So, what common features do mixed methods and action research share? What makes researchers integrate mixed methods into action research studies?

## CONNECTING MIXED METHODS AND ACTION RESEARCH

There are a number of features that make the integration of mixed methods and action research justifiable and realistic. These features should not be interpreted as providing complete and absolute similarity between the two approaches, but rather as offering common ground for connecting mixed methods and action research to produce scientifically sound and effective plans for action and evaluation of the action results. These features relate to the overarching goals of mixed methods and action research; their philosophical foundations, social justice perspective, and certain methodological and procedural characteristics. Box 3.1 summarizes these features, which are further discussed in the following sections.

### BOX 3.1

#### Common Features of Mixed Methods and Action Research

- Mixed methods and action research follow the principles of systematic inquiry in designing and implementing research endeavors.
- Mixed methods and action research are aimed at providing comprehensive information: mixed methods seeks to provide comprehensive answers to study research questions, whereas action research seeks to provide comprehensive solutions to practical problems.
- Mixed methods and action research have an underlying pragmatic philosophical foundation of rejecting the quantitative and qualitative incompatibility thesis.
- Mixed methods and action research are dialectical in nature, moving from exploratory to explanatory, and then to confirmatory, through identifiable study phases.
- Mixed methods and action research use reflective practice, because both require reflection about the next step that is grounded in the results from the previous step.
- Mixed methods and action research apply a transformative/advocacy lens aimed at seeking social justice.
- Mixed methods and action research use quantitative and qualitative information sources; they both collect and analyze quantitative and qualitative data.
- Mixed methods and action research are cyclical in nature, and both follow clearly defined study phases.
- Mixed methods and action research apply a collaborative approach to research because they seek knowledge about “what works” in practice.
- Mixed methods and action research combine *insider–outsider* perspectives: in mixed methods due to a changing researcher’s role and in action research due to its participatory nature.

## Following Principles of Systematic Inquiry

As research approaches, both mixed methods and action research are designed and conducted following a set of systematic procedures or steps, from the identification of the research problem and formulation of research questions to data collection, analysis, interpretation, and evaluation. Specifically, Maxwell and Loomis (2003) suggested that mixed methods researchers should consider five interconnected research components while designing a mixed methods study: (1) the study purpose, (2) its conceptual framework, (3) research questions, (4) methods for data collection and analysis, and (5) validity or credibility issues. Writing about action research, Stringer (2014) emphasized its systematic character by describing action research as a mechanism for practitioners to engage in a systematic inquiry “to design an appropriate way of accomplishing a desired goal and to evaluate its effectiveness” (p. 6). By providing the means to systematically investigate the issue in diverse contexts, action research enables practitioner-researchers to find more effective solutions and their efficient applications. Indeed, Kurt Lewin’s (1948b) original idea of action research, as discussed in Chapter 2, is grounded in the systematic cycle of information gathering, analysis, and reflection.

## Providing Comprehensive Information

Mixed methods research seeks to provide more comprehensive answers to study research questions through the integration of quantitative and qualitative methods with the purpose of examining an issue from different aspects. Speaking about the advantages of mixed methods, Yin (2006) wrote that “Implicit in the prominent role played by a single study is the valuing of mixed methods in producing converging evidence, presumably more compelling than might have been produced by any single method alone” (p. 41). Mixed methods studies tend to be more informative than mono-method studies, because they follow a fundamental principle of mixed methods research—that of building on the strengths of different methods (Johnson & Onwuegbuzie, 2004; Johnson & Turner, 2003).

Refer to Chapter 1 for the discussion of a fundamental principle of mixed methods research.

While mixed methods seeks to provide more comprehensive answers to study research questions, action research seeks to provide more comprehensive solutions to practical problems. As discussed in Chapter 2, an overall purpose of action research is to enable practitioner-researchers to better understand and solve imperative problems in their social settings (McKernan, 1988). Herr and Anderson (2005) insightfully observed, “Solid action research leads to a deepened understanding of the question posed as well as to more sophisticated questions” (p. 86). By going through a spiral of cycles of critical action and reflection, practitioner-researchers gain a more robust understanding of the issue and thus are able to design action plans grounded in more weighted solutions.

## Being Pragmatic

As discussed in Chapter 1, pragmatism serves as a philosophical foundation for mixed methods research. Pragmatism rejects the quantitative and qualitative incompatibility thesis and helps justify the

Refer to Chapter 1 for the discussion of pragmatism.

combination of quantitative and qualitative methods within one study in order to seek the best answers to the posed research questions (Maxcy, 2003). Johnson and Onwuegbuzie (2004) suggested that the basic pragmatic research method applied in a mixed methods approach should consist of choosing “the combination or mixture of methods and procedures that works best for answering your research questions” (p. 17).

Although action research is sometimes associated with a **constructivist** worldview because of its exploratory nature and reliance on qualitative methods (Stringer, 2014), a practical focus of action research and the need to design and implement effective action plans often calls for a “what works” approach. Importantly, considering their own experiences of conducting action research, Greenwood and Levin (2007) referred to it as pragmatic because they rejected the assumption that action research cannot be scientific. They also believed that “action researchers are obligated to be competent in all major forms of social inquiry” (p. 6). Indeed, as discussed in Chapter 2, action research is viewed as a combination of empirical (knowledge derived from experience) and rational (knowledge derived from scientific reasoning) procedures that require multiple sources of evidence; therefore, pragmatic epistemological principles provide a useful philosophical rationale for action research studies that use both quantitative and qualitative data. Christ (2010) also argued that action research is influenced by Dewey’s view of pragmatism, because knowledge is created through action.

## Being Dialectical

The fact that mixed methods research is grounded in the philosophy of pragmatism makes mixed methods acceptable to other philosophical paradigms underlying quantitative and qualitative research approaches (Johnson et al., 2007; Teddlie & Tashakkori, 2009). A complex nature of mixed methods research aimed at addressing exploratory and confirmatory questions within a study requires an effective combination of available methods, diverse viewpoints, and creative ideas. Greene (2007) suggested that mixed methods researchers should adopt the “**dialectic stance**” (p. 79). In other words, researchers need to think dialectically and incorporate multiple **mental models** with their distinctive epistemological characteristics and research traditions when designing and conducting mixed methods studies. Thinking dialectically implies critically selecting the best available methods and their combinations to address the complexity of the modern society and to better understand the studied phenomena.

Refer to Chapter 2 and Figure 2.5 for the discussion and illustration of Stringer’s (2014) action research interacting spiral.

A practical focus of action research also necessitates using a dialectical approach to seeking effective solutions. For example, Winter (1987) argued that any attempt to understand practice must be dialectical because any social practice consists of an intertwined network of complex and contradictory elements and relationships, including individual and organizational knowledge, skills, values, and ethics. Winter indicated that these relationships are “experienced in almost instantaneous succession as a single essence and a plurality of qualities, as universal and specific, as self-defined and as defined-in-relation-to-another” (p. 12). The dialectical nature of action research is reflected through the spiral of action research cycles consisting of reflecting, planning, acting, and observing

(Lewin, 1948b). Stringer's (2014) representation of the action research process as an interacting spiral of looking, thinking, and acting, perhaps, best captures the dialectical essence of action research.

## Using Reflective Practice

Reflexivity in mixed methods and action research is closely related to the dialectical nature of these research approaches (Greene, 2007). When conceptualizing a mixed methods study, the researchers critically consider the choice of the epistemological strategies that best match the research problem they intend to investigate. Designing and conducting a mixed methods study requires reflection about a range of theoretical and practical issues, including the choice of a research focus, a study design, quantitative and qualitative methods to collect and analyze the data, and the strategies for integrating the quantitative and qualitative methods. A team approach, which is often used in mixed methods projects due to complexity of the research problems addressed, establishes the need for reflection and exchange among the members of the team (Curry et al., 2012; Hemmings, Beckett, Kennerly, & Yap, 2013).

As noted in Chapter 2, reflection is an essential feature of action research. Reflection is “deliberately and systematically undertaken and generally requires that some form of evidence be presented to support assertions” (Herr & Anderson, 2005, p. 3). Reflection is embedded in action research cycles, as is evident from all conceptual models of action research. According to Mills (2011), action researchers incorporate a reflective stance into their daily practices to critically examine and improve them. Researchers critically reflect on the assessment of the identified problem, they use reflection to make a decision about the needed action or intervention, and they reflect on the action outcomes and further steps to take.

Refer to Chapter 2 for the discussion of a role of reflection in action research.

## Applying Transformative/Advocacy Lens

Mixed methods research is frequently cited as lending itself to a **transformative-empowerment framework** (Mertens, 2003), or as applying an **advocacy lens** (Creswell, 2003). For example, Johnson and colleagues (2007), who analyzed 19 definitions of mixed methods research, quoted Mertens (2003) when defining mixed methods research within a transformative-empowerment framework as the following:

Mixed methods research, when undertaken from a transformative stance, is the use of qualitative and quantitative methods that allow for the collection of data about historical and contextual factors, with special emphasis on issues of power that can influence the achievement of social justice and avoidance of oppression. (Mertens, 2003, as cited in Johnson et al., 2007, p. 120)

In fact, transformative mixed methods approach is often viewed as embedded in participatory action research. According to Mertens, Bledsoe, Sullivan, and Wilson (2010), transformative mixed methods “suggests the need for community involvement, as well as the cyclical use of data to inform decisions for next steps,



whether those steps related to additional research or to program changes” (p. 199). The argument for such assertions is that mixed methods produces knowledge that reflects the power and social relationships in society, thus giving people the tools to improve it.

As discussed in Chapter 2, action research is always value laden. For instance, Herr and Anderson (2005) wrote that “[a]ction research takes place in settings that reflect a society characterized by conflicting values and an unequal distribution of resources and power. . . . Action researchers must interrogate received notions of improvement or solutions in terms of who ultimately benefits from the actions undertaken” (p. 4). In action research, practitioner-researchers cocreate knowledge, policy, and practice through an iterative process of action and learning. This process often includes reappraisal of the existing norms, values, and assumptions and developing an understanding of how they are shaped by power, raising an awareness of a social change (Pettit, 2010).

## Using Quantitative and Qualitative Information Sources

As discussed in Chapter 1, one of the characteristic features of mixed methods research is the integration of both quantitative and qualitative methods within a study; such methods’ integration has its unique advantages (Creswell & Plano Clark, 2011; Teddlie & Tashakkori, 2009). In mixed methods studies, researchers combine quantitative and qualitative data to reach more validated and more complete answers to the posed research questions. Both types of data are particularly required when there is a need to address confirmatory (verifying knowledge) and exploratory (generating knowledge) questions within a single study (Teddlie & Tashakkori, 2009).

The ability to address both confirmatory and exploratory questions is also appealing to action researchers, who look for more comprehensive solutions to complex practical issues in professional settings. Many action research texts emphasize the need for including multiple sources of evidence, and discuss collection and analysis of different types of quantitative and qualitative data (Hinchey, 2008; Koshy et al., 2011; Tomal, 2010). Some authors mention the use of mixed methods designs (James et al., 2008; McNiff & Whitehead, 2011; Mills, 2011). As Greenwood and Levin (2007) indicated, the need for addressing complex social problems makes it necessary for action researchers to be knowledgeable about major quantitative and qualitative data collection strategies and to be able to use them effectively when engaged in action research studies.

## Being Cyclical

A mixed methods study may often consist of multiple quantitative and qualitative strands that researchers implement sequentially. As discussed in Chapter 1, these strands often build on each other, with one strand informing the next strand. Creswell and Plano Clark (2011) referred to such mixed methods designs as multi-phase—that is, consisting of multiple phases. Teddlie and Tashakkori (2009) suggested that sequential mixed methods designs consisting of more than two strands have an iterative nature, meaning that researchers can move from the initial strand of quantitative or qualitative data collection and analysis to the next strand of alternative data collection and analysis, and then to the next quantitative or qualitative strand seeking more credible answers to the research questions. Additionally, Bryman (2006) noted that a mixed methods study “frequently brings more to researchers’ understanding than they anticipate at the outset” (p. 111). A new focus

on the studied problem may prompt refining research questions and/or changing the study direction.

The cyclical nature is one of the characteristic features of action research. The cycle of activities forms a research spiral in which “each cycle increases the researcher’s knowledge of the original question, puzzle, or problem” (Herr & Anderson, 2005, p. 5). In action research, one step leads to another and is repeated multiple times to form a continual improvement process. During these steps the methods and the understanding of the problem are refined based on the knowledge gained in earlier steps (O’Leary, 2004).

Refer to Chapter 2 for the discussion of the cyclical nature of the action research process as one of its methodological characteristics.

### Adopting a Collaborative Approach to Research

The breadth and scope of mixed methods studies often require a collaborative team approach. An integrative use of quantitative and qualitative methods in a mixed methods study calls for the utilization of different research strategies and approaches, and requires different forms of expertise. Shulha and Wilson (2003) described collaborative mixed methods research as “the purposeful application of a multiple person, multiple perspective approach to questions of research and evaluation” (p. 640). They argued that collaborative mixed methods is different from traditional forms of inquiry in its ability to produce results that are reflective not only of certain levels of expertise in quantitative and qualitative data collection and analysis, but also of the researchers’ capacity to learn through collaboration and to construct joint meanings of the data. Moreover, Nastasi, Hitchcock, and Brown (2010) proposed a *synergistic partnership-based fully integrated mixed methods research framework* that implies collaboration and partnership with all interested stakeholders in a mixed methods research project. The authors claimed that inclusion of professional collaboration and stakeholder participatory approaches in mixed methods research is necessary to achieve its pragmatic and transformative goals. Other mixed methods researchers also discussed the need and advantages of a collaborative, team-based, and often multidisciplinary mixed methods approach (Creswell et al., 2011; Padgett, 2012; Tritter, 2007).

Collaboration is one of the principles of action research because through action research people engage in examining the social practices that connect them with other people in their social network through social interactions over the studied issue (Kemmis & McTaggart, 2007). Knowledge generation is a collaborative process and requires collegial interactions, active participation, and joint problem solving by all stakeholders and at all stages in the study process (McNiff & Whitehead, 2011). As noted in Chapter 2, action research is best done in collaboration with others who are affected by the issue under investigation. Collaboration takes multiple forms and may involve not only collaboration among practitioner-researchers in their professional settings but also partnerships between “insiders” with outside experts, such as university consultants, other professionals, and/or representatives from a larger community.

### Combining Insider–Outsider Perspectives

The use of both quantitative and qualitative methods that have different underlying philosophical assumptions and epistemological strategies often requires mixed methods researchers to balance insider and outsider perspectives on the problem they study. For example, in the quantitative strand of the study, mixed methods



researchers take an outsider (or observer) role and collect numeric data, often referred to as *etic* data (Currall & Towler, 2003), using quantitative measurement instruments. In the qualitative strand of the mixed methods study, researchers explore and interpret the perspectives and experiences of the individuals who are insiders to the system or organization; this type of data is often referred to as *emic* data. The challenge mixed methods researchers face is to balance etic and emic views in accurately utilizing and presenting the insider's view and the outsider's view (Johnson & Onwuegbuzie, 2006).

Action research is believed to have a focus on the insider because it is originated by practitioners in their communities. However, Herr and Anderson (2005) argued that since action research often involves multiple stakeholders and collaborative partnerships, it "leaves the positionality (insider or outsider) of the researcher open" and may create challenges associated with the balance of power, ownership of the data, and accuracy of the problem representation (p. 3). To overcome this "insider-outsider conundrum" (p. 53) and bring both the insider and outsider perspectives into the inquiry process, action research should always be collaborative and participatory, regardless of whether a researcher is an outsider or an insider to the study setting. As discussed in Chapter 2, fostering colearning and capacity building among all partners in an action research project is one of the principles of community-based action research (Schulz et al., 1998).

Refer to Chapter 2 for the discussion of the nine principles of community-based participatory action research.

So, these common features between mixed methods and action research seem to provide enough support for integrating the two approaches within a study. This leads to an important question related to the application of mixed methods in action research: How can mixed methods inform and enhance action research?

## ADVANTAGES OF APPLYING MIXED METHODS IN ACTION RESEARCH

As explained in the introduction to this chapter, the argument for connecting or integrating mixed methods and action research is not new. Many mixed methods and action research authors recognize the need for and advantages of applying mixed methods in action research studies. First and foremost, an increased utility of the mixed methods approach across social, behavioral, and health sciences in the recent decade (Alise & Teddlie, 2010; Creswell, 2010; Ivankova & Kawamura, 2010) produces evidence to conclude that mixed methods can provide a sound methodological framework for action research due to its ability to produce conclusions about the research issue that are more rigorous and more consistent. Moreover, in times of evidence-based and data-driven calls for improvement, there is a need for action research that meets rigorous standards to generate scientifically sound and effective plans for action or interventions (James et al., 2008; Lyons & DeFranco, 2010; McNiff & Whitehead, 2011; Mills, 2011). For example, McNiff and Whitehead (2011) argued that without a solid research and knowledge base, action research often turns into "a form of personal-professional development" (p. 11). Applying mixed methods in action research may help provide a comprehensive initial assessment of the problem, develop a more solid plan of action, and conduct a more rigorous evaluation of the action/intervention implementation through informed integration of multiple quantitative and qualitative data sources. When combined with mixed methods, action research can assist practitioner-researchers and stakeholders in developing what Lyons and DeFranco (2010) referred to "a new appreciation for a data-driven decision-making process" to inform the improvement of their current practices (p. 149).

Rigorous action research goes beyond simply solving a problem. It compels practitioner-researchers to reconsider the problem in a more complex way, often leading to a new set of questions or problems (Anderson & Herr, 1999). Incorporating mixed methods procedures into each action research cycle may help practitioner-researchers secure a more systematic approach to action/intervention monitoring, thus providing a solid ground for promoting sustainability of change. Additionally, by capitalizing on the strengths of both quantitative and qualitative methods (Johnson & Turner, 2003), mixed methods can help ensure better transferability of the action research study results to other contexts and community settings. As Young and Higgins (2010) indicated with reference to public health and health care, action research that “frames mixed method research has potential to bring contextualized clinically relevant findings into program planning and policy-making arenas toward developing meaningful health and social policies relevant to primary prevention” (p. 346).

Besides, action research is seen “as producing not only conceptual knowledge but also as exploring *new ways of knowing*” (Herr & Anderson, 2005, p. 58, emphasis in original). Mixed methods, as an established research approach, builds on the meaningful integration of quantitative and qualitative methods, thus creating new and more enhanced ways of learning about the problem of interest. The ability of mixed methods research to provide opportunities to think creatively and to theorize beyond a traditional quantitative-qualitative divide helps generate more valid meta-inferences to inform the need and direction for social change (Greene & Caracelli, 1997; Mason, 2006). Furthermore, a pragmatic nature of mixed methods research makes it advantageous over a single method approach, such as quantitative or qualitative, in illuminating and assessing change over time without sacrificing the credibility and validity standards (Perry, 2009).

Box 3.2 summarizes the advantages of applying mixed methods in action research. These observations are grounded in the literature about these two research approaches and in published action research studies that applied mixed methods in one or several stages in the research process. Refer to Box 3.3 for an illustration of how Phillips and Davidson (2009) explained the advantages of applying mixed methods in their Residential-Palliative Approach Competency (R-PAC) action research project.

So, mixed methods, as a sound and pragmatic research approach, is viewed as being advantageous for supporting action research and providing a solid scientific methodological framework for it. This leads to another question: At what stages or steps in the action research process can practitioner-researchers apply mixed methods?

## APPLICATION OF MIXED METHODS IN ACTION RESEARCH

### Mixed Methods Methodological Framework for Action Research

A new mixed methods methodological framework for action research is proposed to guide further discussion of how mixed methods can be applied in action research. This mixed methods methodological framework for action research is graphically presented in Figure 3.1 and conceptually follows the model of action research steps discussed in Chapter 2. Each step is treated as an individual phase in the research process because it has clearly defined boundaries with the starting and ending points. Figure 3.1 shows how mixed methods can inform and enhance each phase in the cycle of the action research process. Solid arrows indicate the

Refer to Chapter 2 and Figure 2.6 for the discussion and illustration of the steps in the action research process.

**BOX 3.2****Advantages of Applying Mixed Methods in Action Research**

- Mixed methods research helps establish a scientific methodological framework for action research.
- Mixed methods research helps enhance a systematic approach to research through informed and consistent utilization of quantitative and qualitative methods.
- Mixed methods research helps create new and more enhanced ways of learning about a practical problem/issue.
- Mixed methods research helps provide a comprehensive assessment of the problem through informed integration of multiple quantitative and qualitative data sources.
- Mixed methods research helps generate a more reliable and more valid action/intervention plan, which is scientifically designed and tested.
- Mixed methods research helps enrich credibility and validity of the study results through informed integration of multiple quantitative and qualitative data sources.
- Mixed methods research helps provide a more rigorous evaluation of the action/intervention implementation through informed integration of multiple quantitative and qualitative data sources.
- Mixed methods research helps provide a more systematic approach to action/intervention monitoring and promoting sustainability of change.
- Mixed methods research helps ensure better transferability of the study results to other contexts and settings.

**BOX 3.3****Advantages of Using Mixed Methods in an Action Research Study to Investigate a Palliative Approach in Residential Aged Care**

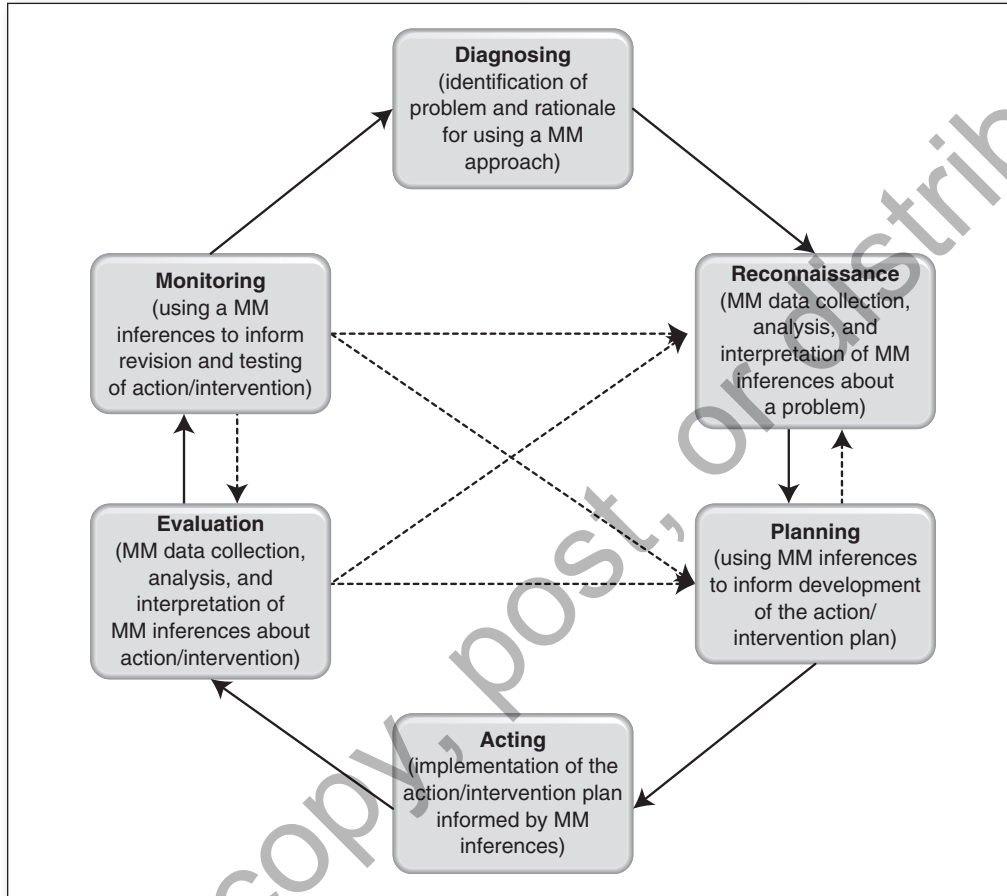
The expansive scope of these research questions suggested that neither purely qualitative nor quantitative methods of data collection would be adequate to provide comprehensive insight into this complex care issue (Mertens 2004). Using mixed methods allowed the researcher to draw from the strengths and minimize the weaknesses of the quantitative and qualitative paradigms across the R-PAC Project's eight sub-studies (Johnson and Onwuegbuzie 2004).

It was also anticipated that conducting a mixed methods research design within an action research framework would help to hasten the teams' understanding of the area of enquiry and achieve the R-PAC Project's research goals in a timely manner (Winter and Munn-Giddings 2001). This occurred because mixed methods offered a practical and outcome-oriented method of enquiry and complemented the action research cycle of reflection, assessment, planning, action and observation.

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From Phillips and Davidson (2009, p. 202).

FIGURE 3.1

**Mixed Methods Methodological Framework for Action Research**

Note: MM = mixed methods.

sequence of the phases in the action research process, while dashed arrows show other possible iterations of the research activities within an action research cycle.

According to the suggested mixed methods methodological framework for action research, mixed methods or some procedural and conceptual aspects of it can be applied at each phase within an action research cycle. During the **diagnosing phase**, when practitioner-researchers identify the problem or issue in the workplace or other community setting that requires a solution, mixed methods can help conceptualize the problem and identify the rationale for investigating it by using both quantitative and qualitative methods. The **reconnaissance, or fact finding, phase** in Kurt Lewin's (1948b) terminology, is when a preliminary assessment of the

identified problem or issue is conducted in order to develop a plan of action/intervention. A systematic and integrative collection and analysis of quantitative and qualitative data during this phase helps generate more thorough interpretations of the assessment results, and create meta-inferences that inform the development of the plan of action/intervention. During the **planning phase**, practitioner-researchers critically reflect on the meta-inferences that were generated as a result of conducting a mixed methods preliminary assessment of the issue; they set the action objectives or expected outcomes and design an action/intervention based on these interpretations and reflections.

The next step in the action research cycle is to act. During the **acting phase**, an action/intervention plan, which was informed by mixed methods inferences, is implemented. Then it is necessary to conduct a rigorous evaluation of the action/intervention to see whether it has produced the desired outcomes. The use of mixed methods during the **evaluation phase** involves collection and analysis of quantitative and qualitative data and interpretation of the integrated quantitative and qualitative results. During the **monitoring phase**, based on the new set of mixed methods inferences that were generated during the action/intervention evaluation, practitioner-researchers make decisions about whether the revisions or further testing of the action/intervention plan is needed. The decision may be to continue with the planned intervention and subsequently conduct more mixed methods evaluation of the intervention outcomes, which may lead to further refinement of the action/intervention plan. Alternatively, a decision may be to return to the reconnaissance phase and conduct more needs assessment or more in-depth investigation of the problem and change the action plan based on the new mixed methods inferences.

The results of mixed methods evaluation can also help practitioner-researchers recognize that the problem or issue is not well identified or focused and that further diagnosing of the problem is needed. In this situation, practitioner-researchers may return to the initial diagnosing phase to further conceptualize the problem and assess the current situation; based on this assessment, practitioner-researchers will make a decision about how to best proceed and develop a revised plan of action/intervention using informed integration of multiple quantitative and qualitative data sources. If the action/intervention is successful, continuous mixed methods evaluation of its progress can help promote sustainability of the action/intervention and enable transferability of the action research study results to other contexts and community settings.

The mixed methods methodological framework for action research is further discussed and illustrated in this chapter using examples of published action research studies that applied mixed methods in different disciplines. One example includes a published research protocol for an action research study in health care to illustrate how the study has been conceptualized during the diagnosing phase. But before moving to this discussion it is worthwhile to look at the trends in the application of mixed methods in published action research studies across disciplines.

So, how do action researchers use mixed methods, and what reasons do they provide for integrating mixed methods into the action research process?

### Application of Mixed Methods in Published Action Research Studies

To assess the scope and level of use of mixed methods in action research studies, six library databases (Academic One File, Academic Search Premier, ERIC, PsycINFO, PubMed, and Social Sciences Full Text) were

searched for empirical studies using combinations of the following search terms: “action research,” “practitioner research,” “participatory research,” “community-based research,” “mixed method(s),” and “mixed-method(s).” The search was limited to articles in the English language published in peer-reviewed journals. No limit on the year of publication was set, but the search was limited to inclusion of articles up to December 2012. The goal was to identify action research studies that intentionally used mixed methods as part of the study design, data collection, or analysis. Only completed action research studies or those that were in progress were considered. Both quantitative and qualitative data collection had to be reported to meet an accepted definition of mixed methods research (Tashakkori & Creswell, 2007). Methodological discussions, meta-analysis, and reviews of the literature were excluded from analysis. After eliminating overlapping studies across the databases, 108 action research studies that had both quantitative and qualitative components reported in one paper were considered eligible for further analysis. These studies were termed **mixed methods action research (MMAR)** studies and are referred to as such in this book hereafter. Being embedded into the mixed methods methodological framework for action research, a MMAR study includes the methodological and procedural steps that characterize a traditional mixed methods research study, but differs from it in the specific purposes of the reconnaissance or evaluation phases of the action research cycle.

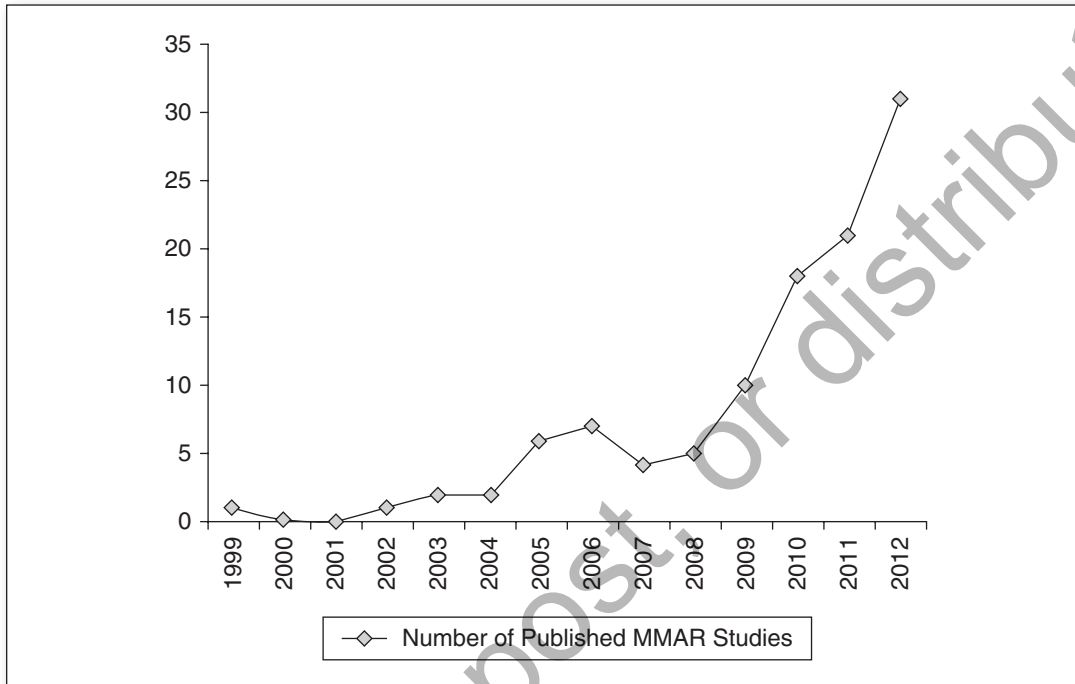
Refer to Chapter 1 for Tashakkori and Creswell's (2007) definition of mixed methods research.

Each article was obtained in full text and coded for the following eight indicators: (1) subject area or discipline, (2) indication of the use of mixed methods, (3) phase in the action research process where mixed methods was used (reconnaissance, evaluation, or both), (4) rationale for using mixed methods, (5) study purpose and research questions/objectives/aims, (6) sequence or timing of the quantitative and qualitative data collection and analysis during each phase, (7) indication of the mixed methods design used, and (8) types of quantitative and qualitative data collected. Since the coded information was explicitly presented or not presented in the reviewed articles, there was no need for an inter-coder agreement procedure to verify the credibility of this information (Babbie, 2005).

### *Year of Publication and Discipline*

The selected 108 MMAR studies were published between 1999 and 2012, with the majority of the studies (80, or 74%) published between 2009 and 2012 (see Figure 3.2). Such an increase in the reported studies that applied mixed methods in action research is not surprising, if we take into account a dramatic increase in published mixed methods methodological discussions, publication of some major mixed methods books, and adoption of mixed methods in the disciplines that previously favored a mono-method approach (Ivankova & Kawamura, 2010). The MMAR studies covered 10 subject areas or disciplines with the predominance of them in health and education (87, or 76%): health care (42), higher education (21), kindergarten through 12th grade, or K-12 education, (17), nursing (7); other disciplines included psychology (6), social work (5), sociology (4), environmental science (2), management (2), and organizational learning (2; see Figure 3.3). The historical receptivity to using action research in education and the increasing utilization of participatory and community-based research in health can account for the prevalence of MMAR studies in health and education.



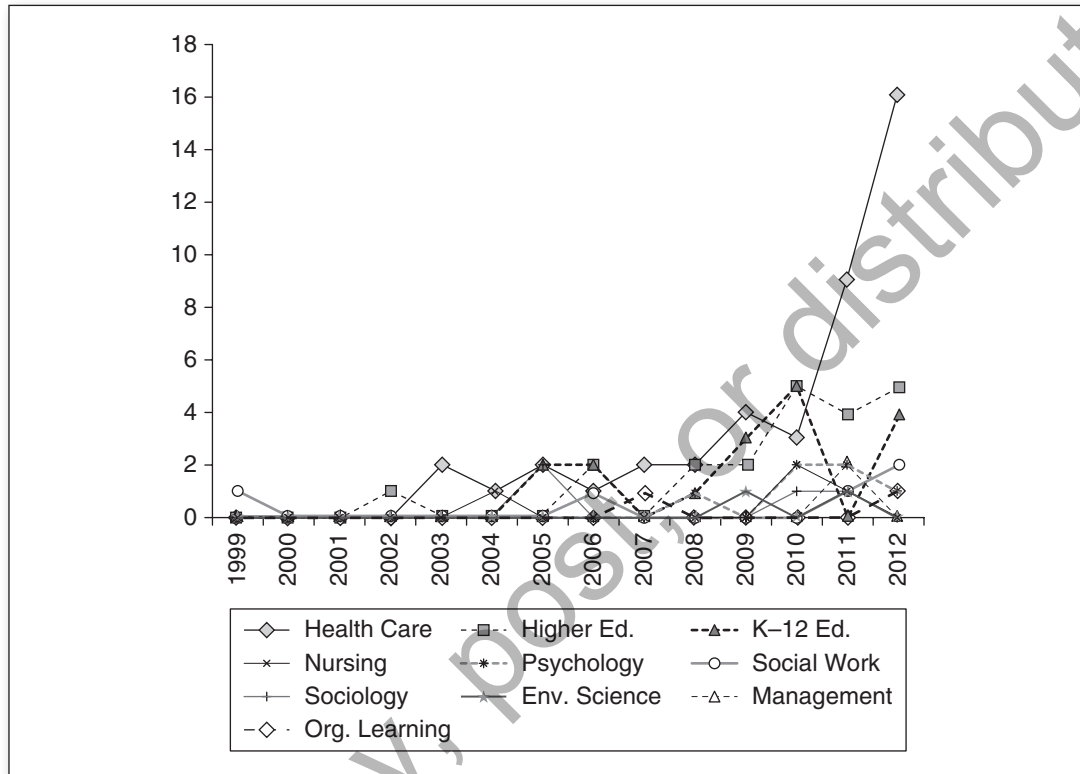
**FIGURE 3.2** MMAR Studies by Year of Publication

### *Indication of the Use of Mixed Methods*

In more than half of the studies (56%) reviewed, the authors explicitly indicated the use of mixed methods either in the article title, or abstract, or the methods section, or both in the abstract and the methods section. The observed tendency is for the authors in recent years (2010–2012) to more frequently mention employing a mixed methods approach or design in addition to action research. In the earlier years, the authors tended to discuss the use of both quantitative and qualitative methods as part of the action research process without specifically referring to mixed methods.

It is interesting that in less than half of the reviewed studies (47%) in which the use of mixed methods was indicated the authors did not elaborate on mixed methods in the body of the article after referring to it in the title or abstract. No observable trends per year or per discipline were noticed for the articles that reported but did not explain the use of mixed methods, or for those that did not refer to mixed methods but utilized both quantitative and qualitative data. This lack of consistency in explaining a mixed methods study design in addition to using an action research approach may be attributed to the fact that not all action researchers had enough information on how to integrate mixed methods and action research at the time of the article publication or, alternatively, that they considered the use of multiple quantitative and qualitative methods as part of the action research design.

FIGURE 3.3

**MMAR Studies by Subject Area or Discipline and Year of Publication***Rationale for Using Mixed Methods*

More than half of the articles (53%) that indicated the use of mixed methods included the rationale for using this approach as part of the action research study. The most common rationale was triangulation of quantitative and qualitative data sources to ensure the breadth and depth of the study and to enhance the study validity. Another argument provided for combining quantitative and qualitative methods was the fact that such integration gives researchers an opportunity to view the studied phenomenon from multiple perspectives and to draw more enriched conclusions about the problem/issue. Authors also mentioned that using mixed methods allowed for capturing perspectives of multiple stakeholders to better inform the policymakers and to ensure the right direction for a change action. Additionally, a systematic collection and analysis of information from multiple data sources was seen as providing a necessary foundation for monitoring the processes and outcomes of change over time. Table 3.1 presents select examples of the reasons for applying mixed methods in action research studies in different subject areas.

*Stage in the Action Research Process*

A mixed methods approach was more frequently used during the evaluation phase (62%) in the action research cycle to evaluate a program, educational activity, organization of practice, intervention, or public health initiative (e.g., Akintobi et al., 2012; Arnold et al., 2012; Davidson et al., 2008; Kostos & Shin, 2010; Shattuck, Dubins, & Zilberman, 2011; Strang, 2011). Application of mixed methods during this phase was more common in action research studies in education, including higher education and K through 12. In 29% of the studies, both quantitative and qualitative methods were used during the reconnaissance phase in the action research cycle, when the assessment of the situation, the problem, and the needs was conducted (e.g., Greysen, Allen, Lucas, Wang, & Rosenthal, 2012; Krueger, 2010; Maritz, Pretorius, & Plant, 2011; Pickard, 2006; Thornewill, Dowling, Cox, & Esterhay, 2011). Such use of mixed methods during this phase was common for MMAR studies across all disciplines. In only 9 % of the reported studies, quantitative and qualitative methods were applied during both reconnaissance and evaluation phases. The articles typically reported either a completed action research study or the first complete action research cycle (e.g., McKellar, Pincombe, & Henderson, 2009; Taut, 2007; White & Wafra, 2011; Williamson, Webb, & Abelson-Mitchell, 2004). In such instances the predominance of MMAR studies was obvious in health care and nursing.

*Mixed Methods Design*

Refer to Chapter 1 for the discussion of timing or sequence of study strands in mixed methods research.

A majority of the reviewed articles (73%) used concurrent sequence or timing of quantitative and qualitative data collection and analysis, which means that both quantitative and qualitative data were collected and analyzed independently from each other, sometimes at the same time or parallel. Several studies used different timing during the reconnaissance and evaluation phases. For example, Sampson's (2010) study (discussed further in this chapter) used different timing of quantitative and qualitative data collection and analysis during the reconnaissance (concurrent timing) and evaluating action (sequential timing) phases.

The qualitative-quantitative sequence—that is, collecting qualitative data via individual interviews or focus groups and then using these results to develop an instrument to collect further quantitative information—was more frequently used during the reconnaissance or fact finding phase (e.g., Craig, 2011; Vecchiarelli, Prelip, Slusser, Weightman, & Neumann, 2005). This focus on exploration and an increased use of qualitative data in action research studies was emphasized by many action researchers (Koshy et al., 2011; Mills, 2011; Stringer, 2014). In several MMAR studies (e.g., Pickard, 2006; Seymour, Almack, Kennedy, & Froggatt, 2011), the authors started with collecting data via quantitative surveys; after the analysis of the quantitative data, they conducted focus groups and/or individual interviews to explore the survey results in more depth. In only a small number of studies (7%) the authors labeled the mixed methods design they used as, for example, dominant/less dominant (Reutzler, Fawson, & Smith, 2006), two-phase (Buck & Cordes, 2005), triangulation (Glasson et al., 2006), and parallel (Zoellner, Zanko, Price, Bonner, & Hill, 2012).

Refer to Box 1.2 in Chapter 1 for the example of Ivankova and Stick's (2007) mixed methods study that used a similar design.

**TABLE 3.1** Reasons for Applying Mixed Methods in Select Action Research Studies

Article Citation	Subject Area	Article Purpose	Reason
Clark, Lee, Goodman, & Yacco (2008)	K-12 Education	To report on the action research study that examined male underachievement in public education in one school district	"The purpose of this mixed design was 'to obtain different but complementary data on the same topic rather than to replicate results' (Morse, 1991, p. 121). Using both approaches can also add new perspective and meaning because of the different philosophical assumptions underlying qualitative and quantitative methods (Lawrenz & Huffman, 2002)" (p. 115).
Galini & Efthymia (2010)	K-12 Education	To report on a collaborative action research project carried out to explore the introduction of internal evaluation processes in kindergarten	"A combination of quantitative and qualitative methods and different methodological tools such as questionnaires, interview, observation protocols, journals, were used as it is advisable to have at least two or three different data resources or/and methods (Cohen, Manion & Morrison, 2007. McFee, 1992)" (p. 22).
Blanco, Pino, & Rodriguez (2010)	Higher Education	To report on a collaborative action research study carried out on three groups of beginning Spanish learners during the implementation of a strategy awareness raising program	"The study can be broadly classified as an action research project. It also involved the use of mixed methods combining self-report and observational data. The advantage of combining these methods is that it 'can broaden the scope of the investigation, and enrich the researcher's ability to draw conclusions' (Dornyei 2007, 186)" (p. 56).
Medves et al. (2008)	Higher Education	To report on the community-based action research study of a new inter-professional course preparing learners for life in rural communities	"The evaluation of this course included a mixed methods approach in order to enhance the breadth and depth of the study, and to enable method triangulation to ensure validity" (p. 4).

(Continued)

TABLE 3.1

Article Citation	Subject Area	Article Purpose	Reason
King (2010)	Higher Education	To report on a cross case study of three different educational podcast series to provide a grounded research model based on a macro perspective of these needs and opportunities	"Examining the literature of instructional technology research among diverse populations, action research (Hinchey, 2008) and mixed-methods research (Glaser & Strauss, 1967; Iashakkori & Teddlie, 1998) have served as effective strategies for numerous studies (Jonassen et al., 2003; King & Griggs, 2006) because of the ability to view the experience and data from multiple perspectives" (p. 146).
Davidson et al. (2008)	Health Care	To describe the development of a nurse-directed cardiac rehabilitation program tailored to the needs of women following an acute cardiac event to address their psychological and social needs	"The mixed methods approach uses multiple data sources and approaches. . . . The use of this approach was not only elucidating in the pilot process of intervention development but also increased the depth and scope of exploring women's recovery and adjustment processes" (p. 125).
Kilbride, Meyer, Flatley, & Perry (2005)	Health Care	To report on selected findings from an action research study that addressed the lessons learned from setting up a new inpatient stroke service in a London teaching hospital	"A variety of quantitative and qualitative data were used to systematically generate data, and monitor the processes and outcomes of change over time" (p. 29).
Westhues et al. (2008)	Nursing	To report on the participatory action research project to explore, develop, pilot, and evaluate how best to provide community-based mental health services and support that are effective for people from culturally diverse backgrounds	"The research design can be described as mixed method because it draws on both qualitative and quantitative data, though it is qualitatively driven (Iashakkori & Teddlie, 1998). It can also be described as multimethod because it included 'the conduct of two or more research methods, each conducted rigorously and complete in itself, in one project. The results are then triangulated to form a comprehensive whole' (Morse, 2003, p. 190)" (p. 703).

Article Citation	Subject Area	Article Purpose	Reason
Young & Higgins (2010)	Nursing	To report on a participatory research program aimed at challenging the status quo for women's cardiovascular health	"We reasoned that a mixed method research program, one in which qualitative and quantitative studies informed each other, had the potential to provide 'numbers' for policy-makers and program planners while acting as a vehicle for bringing marginalized women's voices into policy-making and program-planning arenas" (p. 347).
Aylward, Murphy, Colmer, & O'Neill (2010)	Psychology	To report on the intervention, evaluation and specific findings for the mothers and children who participated in the project targeting Australian parents of young children with attachment issues	"By triangulating quantitative and qualitative approaches and varying data sources to obtain a range of stakeholder perspectives (Denzin, 1989), the evaluation established the intervention's impact and acceptability using objective standardized tools, complemented by the participants' subjective and personally articulated experiences" (p. 15).
White & Wafra (2011)	Psychology	To report on an action research mixed methods case study to investigate what impact character education has on school climate and pupil behavior within a primary school in England	"We used Tashakkori and Teddlie's cycle of scientific research design with a qualitative-quantitative-qualitative sequence of investigation to develop a thick description of the human experience underpinning the quantitative finding" (p. 49).
Mirza, Anandan, Madnick, & Hammel (2006)	Social Work	To report on pilot testing and evaluation of an innovative program providing information technology access to people with disabilities that transition out of nursing homes into the community using a participatory approach	"Triangulation of methods and investigators was used to capture a more complete and holistic picture of the phenomenon of IT access for the target population" (p. 1189).



This overview of 108 MMAR studies gives a snapshot of how a mixed methods approach is currently applied in action research. The observed trends provide enough evidence to expect further integration of mixed methods into action research as a way to enhance its effectiveness through the use of many methodological features that mixed methods offers. These MMAR studies are used to support the discussion about the application of mixed methods in action research in Chapters 4 through 9 that focus on the process of conceptualizing, designing, and conducting MMAR studies. The rest of Chapter 3 illustrates how a mixed methods approach was used in select examples of MMAR studies.

## EXAMPLES OF FIVE MMAR STUDIES

Five examples of MMAR studies were selected from different disciplines to illustrate how a mixed methods approach is utilized or can be utilized in action research: in the fields of K–12 education (Kostos & Shin, 2010), nursing (Glasson et al., 2006), social work (Craig, 2011), higher education (Sampson, 2010), and health care (Montgomery et al., 2008). These studies differ in how and when mixed methods was used in the action research process, the study design, and other related methodological characteristics. To facilitate the current discussion and to further illustrate the study details in other chapters of the book, full texts of these articles are included in the Appendix (Examples A–E). *Note:* All page numbers in citations to these illustrative articles throughout the book refer to the original publications.

### Example A: MMAR Study in the Field of K–12 Education (Kostos & Shin, 2010)

Kostos and Shin (2010) used mixed methods in an action research study to investigate how the use of math journals affected second-grade students' communication of mathematical thinking. Since journaling was found to be an effective math teaching and learning strategy in previous studies, the teacher-researcher decided to try it in her classroom to enhance the students' learning of mathematics. The purpose of the study was to design, implement, and evaluate the new instructional approach to teaching math. An action research approach was chosen because the study was conducted by the teacher in her classroom. This enabled the teacher-researcher "to utilize the insight that can only be obtained as an insider to the setting" (p. 226); specifically, it allowed the teacher-researcher to capture the students' thinking process more closely and to collect and analyze the information in more depth.

While conceptualizing and designing the study, Kostos and Shin (2010) decided to employ mixed methods because they wanted "to provide a more in-depth look at how the students communicated their mathematical thinking when using math journals" (p. 226). They stated the following rationale for using mixed methods: "The benefit of using a mixed methodology is triangulation of the findings and adding scope and breadth to a study" (p. 226). Based on the review of the previous studies about math journaling, Kostos and Shin developed an intervention—math journaling instruction that consisted of students writing in math journals three times a week using 16 different prompts. These prompts related to basic and newly learned mathematical concepts. The first three prompts were modeled by the teacher-researcher during the classroom instruction using different strategies on how to solve math problems. Students were required to provide step-by-step explanations of how they solved the posted math problem in their journals.

The study was conducted in a second-grade mixed-ability classroom in a suburban school in Chicago. Sixteen students, eight girls and eight boys, participated in the study. Math journaling instruction was carried out during a 5-week period. To evaluate the effectiveness of the instruction, both quantitative and qualitative data were collected concurrently or independent from each other. The quantitative data consisted of an identical math assessment administered to students before and after the intervention using the Illinois State Board of Education Mathematics Scoring Rubric. The qualitative data included students' math journal entries, interviews with eight randomly selected students, and the teacher-researcher's reflective journal.

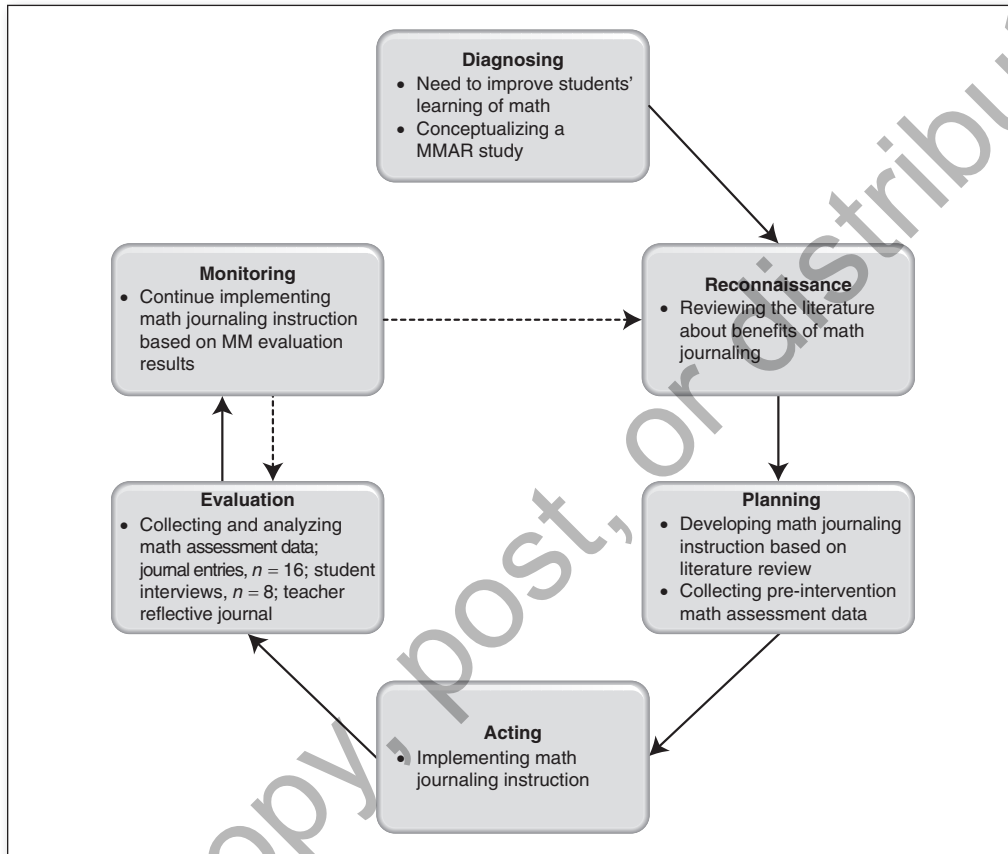
The analysis of the quantitative and qualitative information demonstrated an overall improvement of students' mathematical thinking through math communication. The students' postassessment scores of mathematical knowledge, strategic knowledge, and reasoning were significantly better after than they were before the math journaling intervention. The qualitative results revealed that the use of math journals positively influenced the students' communication of mathematical thinking and the use of math vocabulary. Based on these findings and personal reflections about the instructional intervention process, the teacher-researcher began to use math journaling in daily math lessons: "The use of math journals has become an important part of my classroom" (Kostos & Shin, 2010, p. 230).

In Kostos and Shin's study, mixed methods was used at several phases in the action research cycle. Specifically, an intentional choice of a mixed methods approach initially helped with conceptualizing and designing the study. Then mixed methods was employed to evaluate math journaling instruction through the collection and analysis of the quantitative and qualitative data. The integrated quantitative and qualitative findings provided evidence that math journaling enhanced student learning. The positive study conclusions helped the teacher-researcher make a decision to continue using math journaling in teaching mathematics. Using the mixed methods methodological framework for action research (Figure 3.1) presented earlier in this chapter, a visual diagram was developed to capture the flow of the research activities in Kostos and Shin's (2010) MMAR study (Figure 3.4). Solid arrows show the actual flow of the research activities in the study, while dashed arrows highlight potential future activities related to further evaluation of the instruction or the need to conduct a more detailed literature review in order to inform more effective changes in the current instruction.

### Example B: MMAR Study in the Field of Nursing (Glasson et al., 2006)

Glasson and colleagues (2006) applied mixed methods in a participatory action research study to improve the quality of nursing care for older acutely ill hospitalized medical patients through developing, implementing, and evaluating a new model of care. The study sought to address one of the challenges for nursing practice to better meet the health-care needs of the growing older population. Participatory action research was chosen as an appropriate approach for "re-evaluating and changing nursing practice not only because of its reflecting process during the stages of planning, taking action in practice, observing, reflecting, and replanning, but also for its similarity to the nursing process through the steps of assessment, planning, implementation, evaluation, and replanning (Nolan & Hazelton 1996)" (p. 590). A mixed methods triangulation approach was used "to establish an evidence-base for an evolving model of care" (p. 588). The authors also stated that "[t]he advantages

FIGURE 3.4

**Research Activities in Kostos and Shin's (2010) MMAR Study (Example A)**

Note: MM = mixed methods.

of using several methods to examine the same phenomenon are that it provides more in-depth information on the participants' experiences and feelings (Morse & Field 1996)" (p. 590).

The study was conducted in an acute medical ward in a public hospital in Sydney, Australia. During the first phase of the study (the reconnaissance phase), the aspects of nursing care that acutely ill older patients perceived as being important but found unsatisfactory were identified. The quantitative data were collected from 41 male and female patients (mean age 78 years) using the Barthel Activity of Daily Living Index questionnaire to determine patients' functional capacity and medication regime assessment and to determine patients' knowledge level of their medications. Another quantitative instrument included the Caregiving Activities Scale questionnaire that researchers administered to both patients and nursing staff to identify their levels of satisfaction with nursing care in that medical ward. The Caregiving Activities Scale questionnaire combined

both close-ended (quantitative) and open-ended (qualitative) items. Additional qualitative data included the researchers' field notes taken during the observations of the nursing staff discussions about the need for the model grounded in the analysis of patients' responses, the process of the model development, and ways to implement and evaluate the model. During those meetings, the nurses collaboratively chose a model of care that emphasized addressing two major identified concerns, "encouraging self care and increasing medication knowledge in patients" (Glasson et al., 2006, p. 590).

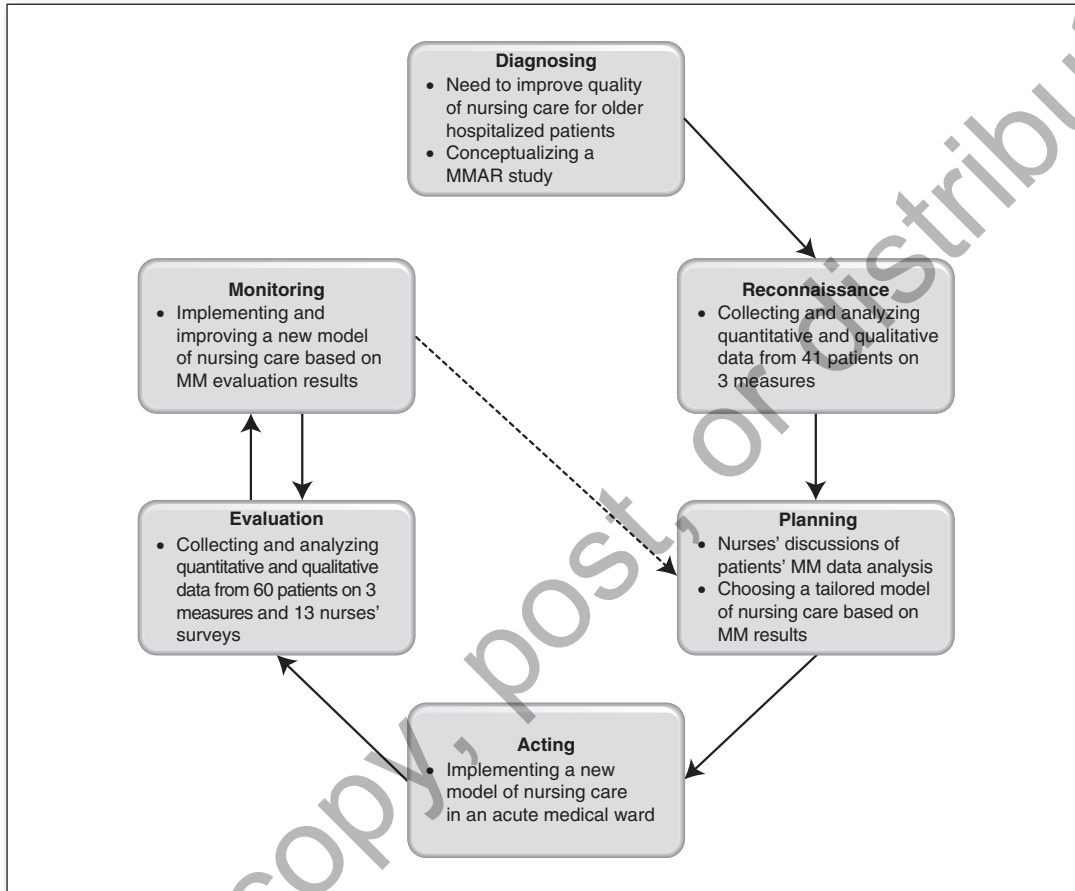
Based on the findings from the reconnaissance phase, the model was implemented in the medical ward and its outcomes were evaluated with 60 acutely ill patients of both genders (mean age 76 years) and 13 nurses working in the ward (the evaluation phase). The patients' functional activities were assessed on hospital admission and prior to discharge using the Barthel Activity of Daily Living Index. The patients' knowledge level about medication administration was also assessed on admission, during the hospital stay, and prior to discharge. Finally, when leaving the hospital patients completed the Caregiving Activities Scale satisfaction questionnaire "to determine whether the implementation of the model of care that was considered to address older patients' identified nursing care issues had resulted in increased patient satisfaction and improved patient care" (Glasson et al., 2006, p. 593). During the last 2 weeks of the model implementation process, the nurses in the ward also completed the Caregiving Activities Scale satisfaction questionnaire that included quantitative items and open-ended questions. The analysis of the quantitative and qualitative evaluation data provided evidence about the efficacy of the new model of nursing care in improving the quality of care for older patients in an acute medical ward setting. The qualitative findings from nurses' comments added understanding of the key concepts related to the process of model development and implementation: barriers to change, enthusiasm to change, collaboration in planning, empowerment in planning, expanding knowledge, and empowerment to change process. Glasson and colleagues (2006) reported that further monitoring and improvement of the model was planned during the re-planning stage.

In Glasson and colleagues' (2006) study, mixed methods was used to inform the data collection and analysis during both the reconnaissance and the evaluation phases in the action research cycle. During the reconnaissance phase, quantitative and qualitative data from questionnaires and focus group discussions were collected and analyzed concurrently to assess the situation in the ward and identify patients' concerns with received nursing care. The results of the analysis informed further discussions among nurses to help choose an appropriate new model of nursing care. The evaluation of the model was conducted through a concurrent collection and analysis of quantitative and qualitative data using the same instruments. The integrated quantitative and qualitative findings confirmed the efficacy of the new model of nursing care and provided directions for its further implementation and monitoring. Figure 3.5 presents the flow of the research activities in Glasson and colleagues' MMAR study. Solid arrows show the actual flow of the research activities in the study, while the dashed arrow suggests potential replanning and revisions of the model to increase its efficacy.

### Example C: MMAR Study in the Field of Social Work (Craig, 2011)

Craig (2011) applied mixed methods in a community-based participatory research project aimed at creating a system of care for gay, lesbian, bisexual, transgender, and questioning (GLBTQ) youths in an urban

FIGURE 3.5

**Research Activities in Glasson et al.'s (2006) MMAR Study (Example B)**

Note: MM = mixed methods.

area. Reportedly, GLBTQ youths are considered a population at risk because they have more predispositions for psychiatric disorders, substance abuse, and suicide. The article reports on the first phase in the project—conducting community needs assessment (the reconnaissance phase). A community-based participatory research approach was necessary to create collaborative partnerships with local agencies. Such partnerships with stakeholders were needed to effectively assess existing health and mental health service delivery systems for GLBTQ young people in the community in order to inform the development of an effective system of care. In Craig's (2011) words, "Successful initiatives require research and collaboration between stakeholders" (p. 275). A mixed methods approach was used to inform a sequential collection and analysis of qualitative and quantitative information to secure the credibility of the findings from the entire study: "The entire research process

was designed to elicit rich qualitative data to contextualize and develop a comprehensive quantitative survey tool (Creswell, 2009; Denzin & Lincoln, 2008) from which to design an evidence-informed system of care. Such heterogeneous sources and approaches to data collection ensure trustworthiness (Clark, Creswell, Green, & Shope, 2008)” (p. 278).

The study was conducted in Miami Dade County, Florida, in collaboration with six agencies that had programs for GLBTQ young people. The needs assessment included five stages that followed a sequential mixed methods approach. During the first stage, the researcher reviewed national and local GLBTQ programs for young people and arranged for visiting select programs to obtain a broad perspective on the creation of a system of care. The analysis of this information helped identify the key informants for qualitative individual interviews to get more in-depth understanding of the desired program components. Forty-five interviews were conducted with local service providers, community leaders, and other stakeholders at different sites during the second stage. The analysis of the interview data informed 10 subsequent focus groups discussions with 180 GLBTQ youths during the third stage of the study. The purpose of the focus groups was “to deepen relationships with the population of interest and to provide a richer understanding of the true needs of the population” (p. 281). During the fourth stage of the study, a quantitative survey instrument for GLBTQ youths, “Youth Speak Out,” was collaboratively developed that was grounded in the qualitative results from the interviews and focus groups. Each draft of the survey was reviewed by a Youth Advisory Board that consisted of 10 youth representatives from the target population. The survey was administered to a nonrandom sample of an additional 273 GLBTQ youths in Miami Dade County. Finally, during the fifth stage, the findings from the survey were presented to the community members to solicit their feedback as well as to identify and implement particular services for GLBTQ young people.

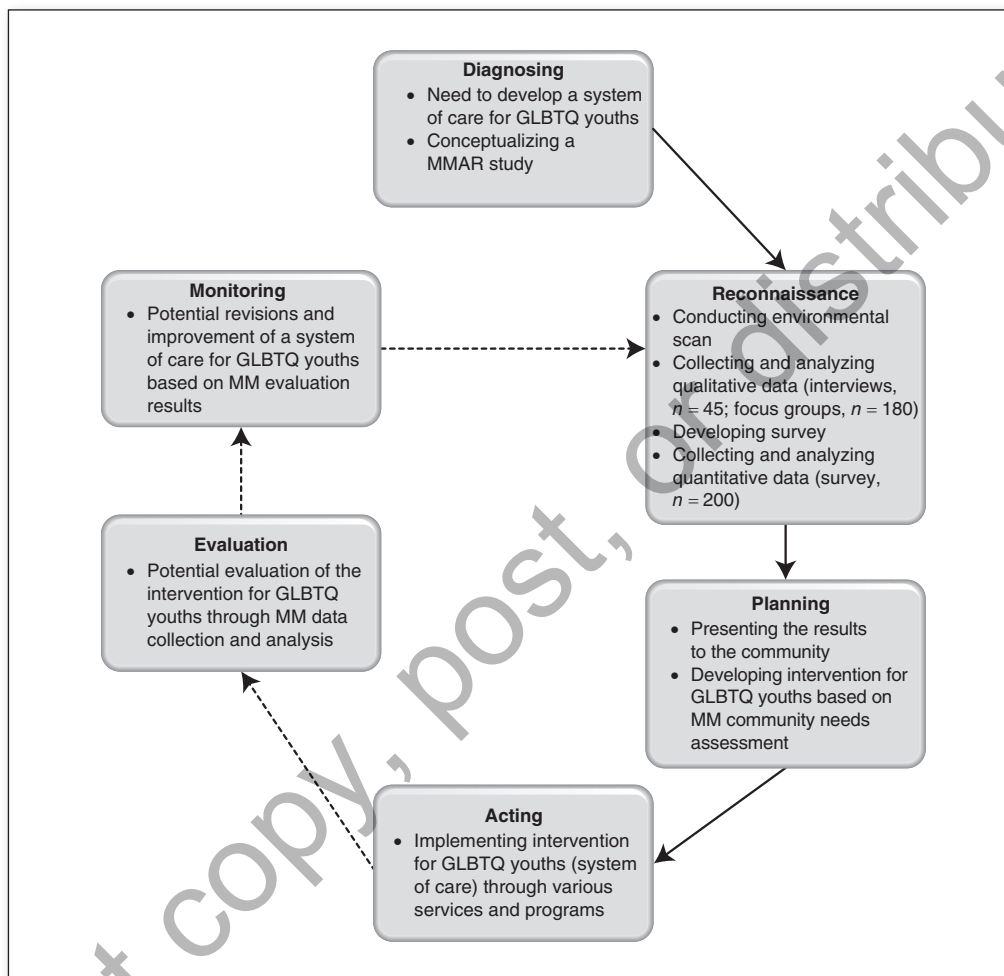
In Craig’s (2011) study, mixed methods was used during the reconnaissance phase to inform a systematic large-scale assessment of the community needs to identify and develop an appropriate intervention for the GLBTQ young people. The qualitative and quantitative data collection and analysis was conducted sequentially: First, the environmental scan was done to inform the selection of the key informants; then qualitative data from key informant individual interviews and youth focus groups were collected and analyzed. The results of the qualitative analysis were used to develop a quantitative survey instrument, “Youth Speak Out,” to get the perspectives of GLBTQ youths in the community. Thus, a systematic mixed methods approach to the survey development helped capture the views of multiple stakeholders and design an intervention consisting of numerous programs and services tailored to GLBTQ youths. Figure 3.6 presents the flow of the research activities in Craig’s (2011) MMAR study. Solid arrows show the actual flow of the research activities in the study, while dashed arrows suggest potential evaluation and monitoring of the system of care for GLBTQ youths with the possibility for conducting more community needs assessment if it becomes necessary.

### Example D: MMAR Study in the Field of Higher Education (Sampson, 2010)

Sampson (2010) applied mixed methods in a semester-long action research study that reported on how students’ feedback was used to guide the choice of a lesson style in a college-level class in which English was the language of instruction. Specifically, the project focused on “identifying the problems and needs felt by the



**FIGURE 3.6** Research Activities in Craig's (2011) MMAR Study (Example C)



Note: MM = mixed methods.

learners after previous learning experiences, exploring a change-action in methodology from the start of the class and follow-up change-actions throughout the semester, to try to address these recognized problems as a group” (p. 284). Action research was chosen for its participatory and collaborative nature and the fact that “the subjective views of learners are of most importance in enacting change” (p. 286). Mixed methods was used for data collection and analysis during both the reconnaissance and evaluation phases for triangulation purposes: “From a practical perspective, quantitative data elicitation methods were employed to provide triangulation,

but kept relatively simple so as to most effectively inform the change-action without interfering with student learning” (p. 286).

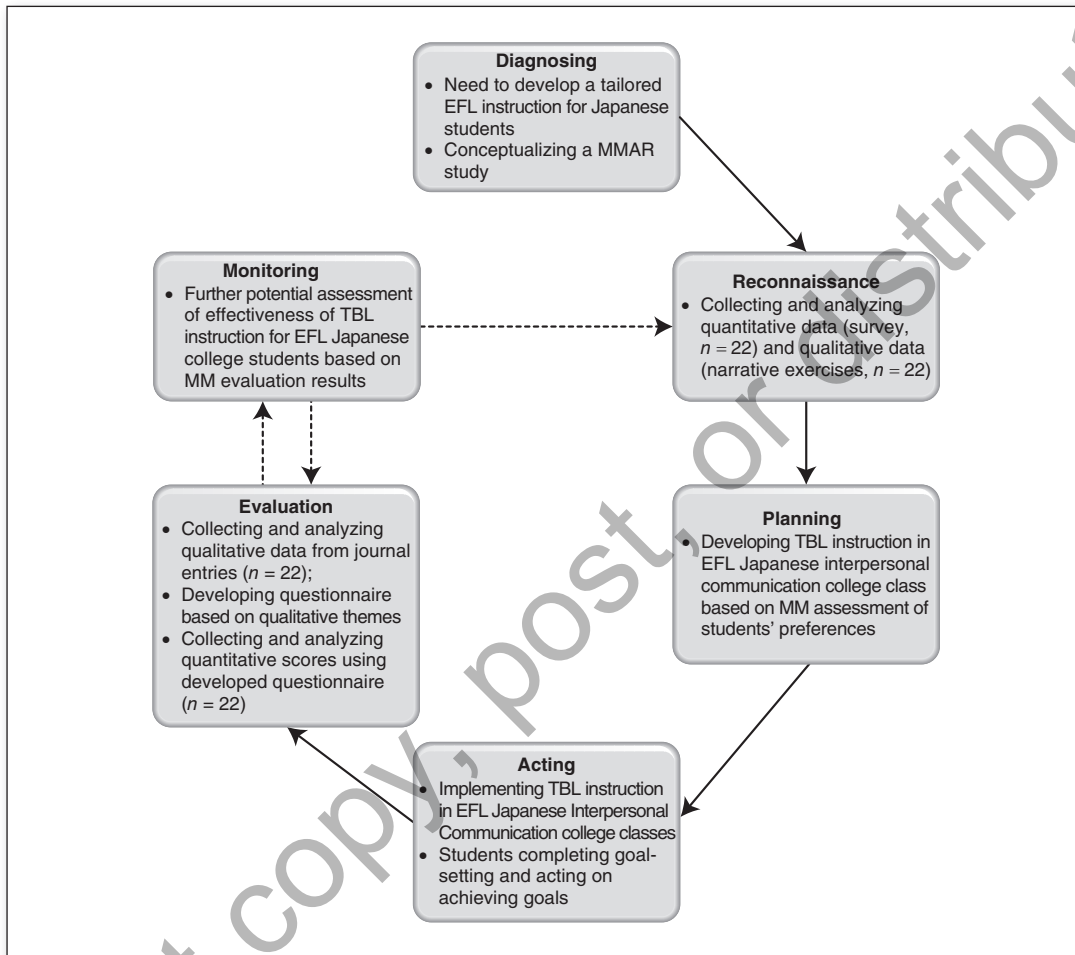
The study was conducted at a women’s university in Japan in Interpersonal Communication classes that were taught in English. Twenty-two first-year students in two classes took part in the study. During the reconnaissance phase (Cycle 1—Sampson, 2010), the students completed both a quantitative survey (the Lesson Style Questionnaire) and a narrative exercise (the Language Learning Autobiography) to identify the preferred lesson style. Based on the analysis of these data, task-based oriented lessons were developed to shape the instruction during Cycle 2 (the planning phase) and to introduce more opportunities for a practical use of English in the classroom. The instruction was refocused to have students “using language in context to complete a variety of tasks, individually or in small groups” (p. 287). Students were required to keep a learning journal to reflect on the activities and learning during each class. During Cycle 3 (the action implementing and evaluation phases), students participated in goal-setting activities for the subsequent lessons to increase their motivation to speak English. The qualitative data from students’ journals were analyzed for themes; the emergent themes informed the development of the quantitative Learning Experience Questionnaire that was completed by the students at the end of the course. The purpose of the questionnaire development was to obtain quantitative indicators of students’ experiences with learning in the course to compare with journal entries “in attempt at triangulating results” (p. 287).

In Sampson’s (2010) study, mixed methods was employed during several phases in the action research process. Initially it was used in the reconnaissance phase to explore students’ preferences for the lesson style to facilitate the use of English during the course. Subsequently it was used during the development of task-based-oriented lessons instruction based on the integrated quantitative and qualitative findings, and then when evaluating the effectiveness of the new lesson style and students’ perceptions of their speaking and communication abilities in English. Of note is that quantitative and qualitative data collection and analysis used different timing during the reconnaissance phase (i.e., concurrent timing when the data from the survey and a narrative exercise were collected and analyzed at the same time), and in the evaluation phase (i.e., sequential timing when the themes from learning journal entries were used to inform the development of the quantitative Learning Experience Questionnaire). Figure 3.7 presents the flow of the research activities in Sampson’s (2010) MMAR study. Solid arrows show the actual flow of the research activities in the study, while dashed arrows suggest potential further evaluation and monitoring of the task-based-oriented lessons intervention with the possibility for conducting more assessment of new students’ preferences for English as a Foreign Language (EFL) lesson style instruction.

### Example E: MMAR Study in the Field of Health Care (Montgomery et al., 2008)

Montgomery and colleagues’ (2008) article presents an example of a published research protocol that describes the research problem, the research goals and questions, and methodological aspects of the study design for a proposed MMAR study. The authors intended to apply mixed methods in an action research study to “describe and evaluate the processes and outcomes” of supported housing programs for persons with serious mental illness in rural communities in northeastern Ontario, Canada, “from the perspective of clients,

FIGURE 3.7

**Research Activities in Sampson's (2010) MMAR Study (Example D)**

Note: MM = mixed methods.

their families, and community workers" (p. 3). To address this issue, the researchers proposed to use "a mixed methods design guided by participatory action research" (p. 1). The researchers believed that the use of an action research approach would allow for including various stakeholders to explore the issue from multiple perspectives—housing residents, their families, and health-care providers. Specifically, a participatory research approach was deemed necessary for several reasons: to create a collaborative research partnership at each of the four identified research sites, to involve the residents in collecting the qualitative data through photo-voice,

and to disseminate the findings among community members to implement them into practice. The researchers considered combining quantitative and qualitative methods within a mixed methods design to be a rigorous research approach that would “allow a more robust analysis and provide multidimensional answers of maximum relevance to the research questions” (p. 3). The researchers explained that the quantitative data would be necessary to describe the study sample, and to measure the residents’ quality of life, housing stability, and housing preference. Qualitative data would help to further explore and understand the patterns and relationships in the collected and analyzed quantitative data.

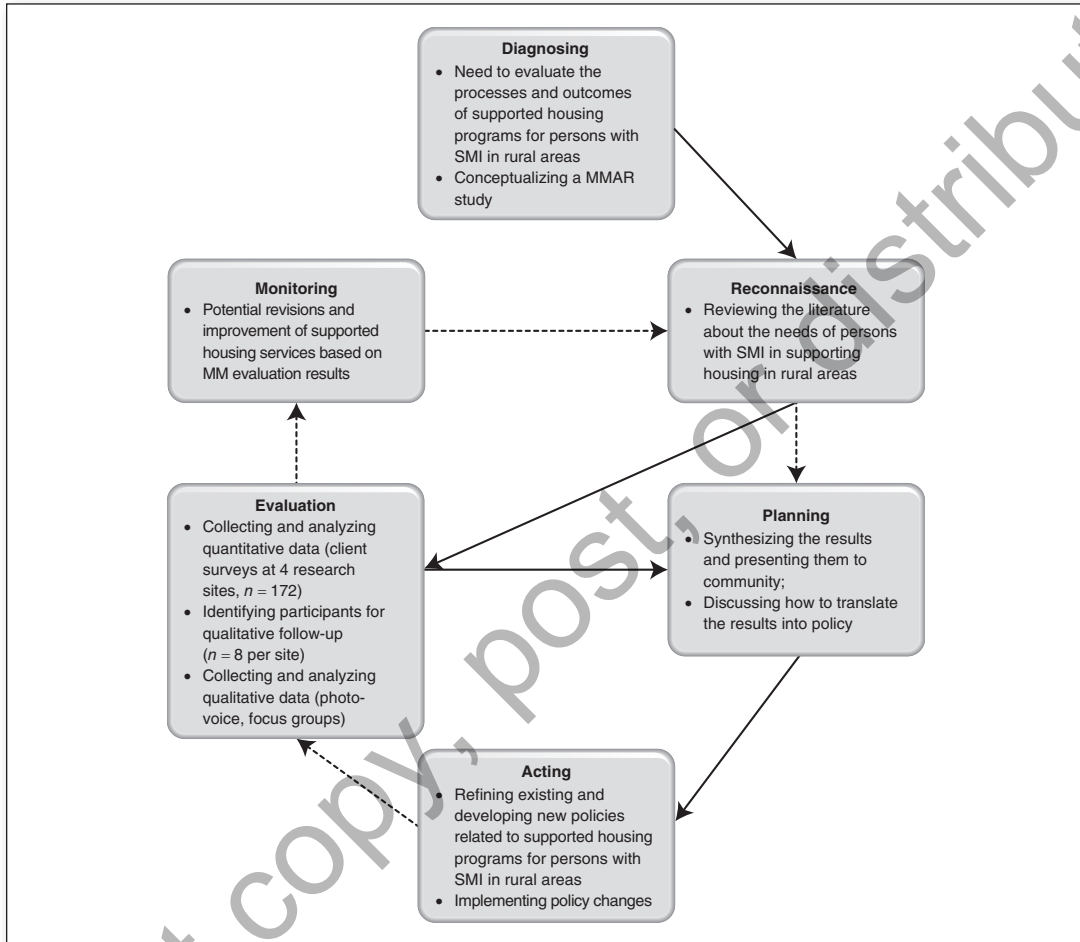
Montgomery and colleagues’ (2008) study was planned to be conducted over a 2-year period in four iterative stages, including the first stage of planning the research activities, two consecutive stages of quantitative and qualitative data collection and analysis, and the fourth stage of synthesizing the findings and translating them into practice. During Stage 1 the researchers proposed to form research partnerships at four research sites so that they could introduce the study and organize the research activities. During Stage 2 the researchers planned to survey 172 residents with serious mental illness at four research sites using four quantitative survey instruments to obtain information about their quality-of-life experiences, subjective feelings about these experiences, housing history, and housing preferences. During Stage 3 the researchers proposed to select eight clients from each site based on the analysis of the survey data to further explore the residents’ perceptions of supported housing services using photo-voice and focus groups. The researchers also planned to include clients’ families and community health workers in the focus group discussions. During Stage 4 the researchers proposed to conduct a community forum including all stakeholder groups to discuss the study findings and how they might be used to inform the changes in current practices. A focus group discussion strategy was proposed to guide the community forum.

In Montgomery and colleagues’ (2008) study proposal, mixed methods will be used to evaluate the existing supporting housing programs for persons with serious mental illness and to use these results to inform health services planning. The qualitative and quantitative data collection and analysis will be conducted sequentially. First, the survey data will be collected and analyzed to address the first three research questions related to housing residents’ quality of life, housing stability, and housing preferences. Second, the qualitative data from photo-voice and focus groups will be subsequently collected and analyzed to explore the stakeholders’ perceptions of supported housing services in more depth and to address the rest of the study research questions. According to the authors, the results from the initial quantitative data analysis phase “will serve as the basis for discussion in the project’s subsequent stages” using qualitative methods (p. 6).

The researchers included a visual diagram of the study design to better communicate a sequential flow of the research activities to their community partners. Montgomery and colleagues believed that blending the two research approaches—mixed methods and action research—would allow them to generate the results that would reflect the perspectives of both the housing residents and housing service providers. Figure 3.8 presents the flow of the research activities in Montgomery and colleagues’ (2008) MMAR study. Solid arrows show the actual flow of the research activities in the study leading from the reconnaissance phase immediately to evaluating the existing supporting housing intervention and then to the planning action and acting phases. Dashed arrows suggest further potential evaluation and monitoring of the improved supported housing services for persons with serious mental illness in rural areas with the possibility for further refinement of the existing policies and the development of the new policies.

FIGURE 3.8

### Research Activities in Montgomery et al.'s (2008) MMAR Study (Example E)



Note: MM = mixed methods.

### SUMMARY

The advantages of using quantitative and qualitative methods in action research studies have long been the focus of attention for action and mixed methods researchers. The increasing utilization of mixed methods as a research approach promoted further discussions of the connection between mixed methods and action research. A number of features that action research and mixed methods share make the integration of the two

approaches justifiable and realistic. Both approaches follow the principles of systematic inquiry in designing and implementing studies, both are aimed at providing more comprehensive information, both have an underlying pragmatic philosophical foundation, both have a dialectical nature, both use reflective practice, both apply a transformative/advocacy lens, both use quantitative and qualitative information sources, both are cyclical, both apply a collaborative approach to research, and both combine insider–outsider perspectives. The chapter further discusses the advantages of applying mixed methods in action research. The mixed methods methodological framework for action research is proposed that was developed based on the model of action research steps discussed in Chapter 2. This framework details how mixed methods can inform each step or phase in the cycle of the action research process.

Application of mixed methods in action research is further discussed and illustrated using 108 empirical MMAR studies from 10 subject areas or disciplines. The results of this analysis show a predominance of MMAR studies in health and education, an increased number of published MMAR studies in recent years (2009–2012), an intentional and recognized use of mixed methods in the action research process, and application of mixed methods concurrently or sequentially at different phases in the action research process. Five examples of MMAR studies in the fields of K–12 education, nursing, social work, higher education, and health care are discussed in detail to illustrate the concepts presented in the chapter.

### REFLECTIVE QUESTIONS AND EXERCISES

1. Conduct a quick search of the library databases for MMAR studies in your discipline. Use the combination of the following search terms: “action research,” “practitioner research,” “participatory research,” “community-based research,” “mixed method(s),” “mixed-method(s),” and the name of your discipline. Record the number of MMAR studies found during each year of publication. What trends do you see in the use of mixed methods in action research studies in your discipline across the years?
2. Reflect on different reasons for applying mixed methods in action research. What reasons do you think may be the most important for using mixed methods in action research studies in your discipline? What reasons have the authors provided for applying mixed methods in the action research published studies that you located? Do you think the authors justified the use of mixed methods in action research well? What may be some additional reasons that the authors did not mention?
3. Reflect on the advantages of using mixed methods in action research studies. Choose several MMAR studies from those that you located and identify at least three benefits of applying mixed methods in these studies. Try to explain how the use of mixed methods has enhanced these studies.
4. Examine the mixed methods methodological framework for action research. In your own words, explain how mixed methods can inform and enhance action research at each phase in the action research cycle.
5. Read MMAR studies (Examples A through E) and reflect on the discussion about these studies in this chapter. Consider how mixed methods and action research approaches were combined or integrated in these studies. Examine Figures 3.4 through 3.8 that reflect the flow of the research activities in the studies.



Discuss what further action research steps may be taken if you were asked to continue implementing these projects.

6. Locate an MMAR published study in your discipline. Carefully read the study report and identify when and how mixed methods was used in the action research process. Specifically, at what phase or phases in the action research cycle was mixed methods used? What quantitative and qualitative data were collected and analyzed? How did the use of mixed methods help inform the development and implementation, or evaluation of the action/intervention in the study? Draw a diagram that reflects the flow of the research activities in these studies.

### FURTHER READINGS

To learn more about a pragmatic nature of action research, examine the following source:

Greenwood, D., & Levin, M. (2007). *Introduction to action research: Social research for social change* (2nd ed.). Thousand Oaks, CA: Sage, Ch. 9, pp. 133–150.

To learn more about mixed methods as a collaborative research approach, examine the following source:

Shulha, L. M., & Wilson, R. J. (2003). Collaborative mixed methods research. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social & behavioral research* (pp. 639–669). Thousand Oaks, CA: Sage.

To learn more about transformative mixed methods research, examine the following source:

Mertens, D. M., Bledsoe, K. L., Sullivan, M., & Wilson, A. (2010). Utilization of mixed methods for transformative purposes. In A. Tashakkori & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social & behavioral research* (2nd ed., pp. 193–214). Thousand Oaks, CA: Sage.

To learn more about a synergistic partnership-based fully integrated mixed methods research framework, examine the following source:

Nastasi, B. K., Hitchcock, J. H., & Brown, L. M. (2010). An inclusive framework for conceptualizing mixed methods design typologies: Moving toward fully integrated synergistic research models. In A. Tashakkori & C. Teddlie (Eds.), *SAGE handbook of mixed methods in social & behavioral research* (2nd ed., pp. 305–338). Thousand Oaks, CA: Sage.

To learn more about Wisniewska's (2011) comparison of the use of mixed methods and action research in English Language Teaching, examine the following source:

Wisniewska, D. (2011). Mixed methods and action research: Similar or different? *Glottodidactica*, 37, 59–72.

To learn more about how mixed methods was applied in action research studies in education, examine the following sources:

Blanco, M., Pino, M., & Rodriguez, B. (2010). Implementing a strategy awareness raising programme: Strategy changes and feedback. *Language Learning Journal*, 38(1), 51–65.

- Buck, G. A., & Cordes, J. G. (2005). An action research project on preparing teachers to meet the needs of underserved student population. *Journal of Science Teacher Education*, 16, 43–64.
- Lyons, A., & DeFranco, J. (2010). A mixed-methods model for educational evaluation. *The Humanistic Psychologist*, 38, 146–158.

To learn more about how mixed methods was applied in action research studies in health care and nursing, examine the following sources:

- Davidson, P., Digiacomio, M., Zecchin, R., Clarke, M., Paul, G., Lamb, K., . . . Daly, J. (2008). A cardiac rehabilitation program to improve psychosocial outcomes of women with heart disease. *Journal of Women's Health*, 17(1), 123–134.
- Kilbride, C., Meyer, J., Flatley, M., & Perry, L. (2005). Stroke units: The implementation of a complex intervention. *Educational Action Research*, 13(4), 479–504.
- Williamson, G. R., Webb, C., & Abelson-Mitchell, N. (2004). Developing lecturer practitioner roles using action research. *Journal of Advanced Nursing*, 47(2), 153–164.

To learn more about how mixed methods was applied in action research studies in psychology, sociology, and social work, examine the following sources:

- Aylward, P., Murphy, P., Colmer, K., & O'Neill, M. (2010). Findings from an evaluation of an intervention targeting Australian parents of young children with attachment issues: The “Through the Looking Glass” (TtLG) project. *Australian Journal of Early Childhood*, 35(3), 13–23.
- Krueger, P. (2010). It's not just a method! The epistemic and political work of young people's lifeworlds at the school-prison nexus. *Race, Ethnicity and Education*, 13(3), 383–408.
- Mirza, M., Anandan, N., Madnick, F., & Hammel, J. (2006). A participatory program evaluation of a systems change program to improve access to information technology by people with disabilities. *Disability and Rehabilitation*, 28(19), 1185–1199.

To learn more about how mixed methods was applied in action research studies in management, environmental science, and organization learning, examine the following sources:

- Downs, T. J., Ross, L., Patton, S., Rulnick, S., Sinha, D., Mucciarone, D., & Goble, R. (2009). Complexities of holistic community-based participatory research for a low income, multi-ethnic population exposed to multiple built-environment stressors in Worcester, Massachusetts. *Environmental Research*, 109, 1028–1040.
- Strang, K. D. (2011). Radioactive manufacturing projects and politics: Scientist and politician normalized risk decision process. *International Journal of Management and Decision Making*, 11(3/4), 231–248.
- Taut, S. (2007). Studying self-evaluation capacity building in a large international development organization. *American Journal of Evaluation*, 28(1), 45–59.